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ABSTRACT

In this, the second in a series of reports, a study of school and home energy consumption in New York was undertaken to determine if schools would save energy by closing for an extended period during cold weather; if more energy is used in homes when schools are closed than when schools are in session; and, if energy savings by schools during a winter closing are offset by increased use of energy in homes. Ten New York State school districts provided gas, oil, and/or electric meter readings of 24 school buildings during the month of February. Seven of these districts asked students to collect their home gas and electric meter readings. Energy use each day was adjusted by the average temperature of that day and converted to BTU's. Comparisons of energy use when children were "in" school and "out" of school were made for both school buildings and homes. According to the estimates based on the sampled schools and homes, energy would not be saved by closing schools during the cold winter months. Instead more energy may be used due to increased home consumption, which may overbalance school energy savings.
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ENERGY CONSUMPTION IN SCHOOLS AND HOMES

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Technical Report No. 2

of

A Study of School Calendars
Conducted for the Board of Regents
of the State of New York

by

The Division of Research

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November 1978

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Carl E. Wedekind

ACKNOWLEDGEMENTS

A study of energy use in schools and homes requires extensive cooperation of personnel in the local school districts. Not only must the superintendent agree to allow collection of energy consumption data of his building, but he must also arrange for the collection by his custodial staff. He, or his designee, must coordinate the collection of energy consumption figures of homes in his district. The latter task can be time consuming. Thus, the cooperation of superintendents of the ten districts involved in this study was most appreciated. Superintendents and staff who accepted responsibility for collection of data in the districts were as follows:

Buffalo: Eugene T. Reville, Superintendent
Joseph F. Jones, Associate Superintendent of Plant Services
Cohoes: Gerald W. Amyot, Superintendent
Ronald Gillespie, Administrative Assistant
Cortland: Arthur B. Shedd, Superintendent
Gary Decker, Superintendent of Buildings and Grounds
Elmira: Paul R. Zaccarine, Superintendent
William Lovell, Director of Buildings and Grounds
Marlboro: James A. Silvestri, Superintendent
Richard Beruk, Assistant Suerintendent
New York City: Irving Anker, Chancellor
Hugh McLaren, Executive Director, Division /of School Buildings
Joseph May, Jr., Director, Division of School Buildings
South Jefferson: James A. Monk, Superintendent
Stephen Van Duzen, Administrative Assistant
Southampton: William Woessner, Superintendent
Spackenkill: Richard D. Woolley, Superintendent
Lonnie Palmer, Assistant Principal
Watertown: Charles C. Commeret, Sr., Superintendent
Donald Rickatt, Assistant Superintendent in Charge of Business

Within each of the above districts, actual school energy use figures were secured by engineering or custodial staff, and home energy use by pupils or parents. The meter readings provided by the above people were crucial to the completion of the research. Space does not allow a listing of the names of those who provided home meter readings. Thus, their cooperation can only be acknowledged generally.

General conduct of this study was the responsibility of Gerald H. Wohlferd, Project Operations Manager. Fred Gitlitz, consultant to the calendar study, helped the school districts plan for collection of data in their buildings and homes. Staff members of the Division of Educational Facilities Planning were helpful throughout all phases of this particular study. C. Stanton Baltzel and Robert Miller (deceased) assisted in the selection of the school buildings to be sampled and obtained preliminary agreements for data collection. Later they helped clarify derived consumption figures.

The Albany-Schoharie-Schenectady Board of Cooperative Educational Services acted as facilitators between districts, their Board of Cooperative Educational Services and the State Education Department in the collection of and analysis of data. Ms. Shirley Anderson of the New York State Public Service Commission expedited access to meters in one district and helped assure continued operation on gas in another. Casimir Czwekowski of the Department of Environmental Conservation was instrumental in providing oil flow meters in a New York City school building. Ms. Jean Talbot, Barbara Dunsker, Marilyn Peckham and Nancy Buchman transformed individual meter readings into coherent, energy-use figures. William Alwell and Philip Pillsworth, Division of Research staff members assigned to the calendar study, reviewed the many drafts of this report. The cooperation of all the above cannot pass without recognition.

Carl E. Wedekind, Director
Division of Research

ENERGY CONSUMPTION IN SCHOOLS AND HOMES

Introduction

During the winter of 1976-77 supplies of oil and gas became scarce. As a conservation measure, The Governor of the State of New York ordered industry to close down. Schools were also ordered closed. Fortunately, the severe weather conditions soon abated allowing most schools and industries to reopen within a short time.

In light of projected fuel shortages and rapid depletion of oil and gas resources, the Board of Regents in the spring of 1977 suggested as a conservation measure that the school calendar be altered to include an extensive closing during the winter. Public reaction was immediate and sometimes pointed. Many viewpoints were presented. One was that the closing of schools during a cold month may be counter-productive. It was maintained that fuel would actually be saved if schools remained open since body heat of children and staff provide a substantial portion of that heat necessary to keep a school warm. Home consumption would rise when the children were home due to raised home thermostats and increased use of appliances.

Evidence is available to support these viewpoints. For example, in a three-hour CBS Special News Report entitled, "Energy: The Facts...The Fears...The Future," telecast on August 31, 1977, heat given off by a single adult body was stated as being approximately equal to that of "a hundred watt light bulb." Since the temperature in a building cannot be reduced much lower than 50°F without causing structural damage, the fuel savings are only those of raising the temperature from 50° when school is closed to 65° when open. The contention was that heat from lights and body heat of staff and pupils could supply a large share, if not all, of the differences between 50° and 65°.

THE QUESTIONS

The Division of Research of the New York State Education Department embarked upon a study of school and home energy consumption to determine the answer to three questions:

- Would schools save energy by closing for an extended period during cold weather?
- Is more energy used in homes when schools are closed than when schools are in session?
- Overall, are energy savings of energy by schools during a winter closing offset by increased use of energy in homes?

THE DESIGN

The research design consisted of measuring actual energy use in a sample of school buildings and homes during the month of February, 1978. Energy use data were to be assembled into "in school" and "out of school" sessions for the purpose of determining whether (1) energy is saved by schools by closing during the winter, (2) energy use is increased in homes when schools are closed, and (3) energy usage in both schools and homes combined is less when schools are "in" session or "out." Weekends and vacations provided those days when schools were "out" or not in session. School buildings were grouped (1) by location in a heating degree zone, (2) by age of the building, (3) by level of educational program, and (4) by community type, in order to determine if differences in school energy consumption occurred within these classifications. Home energy consumption data were also grouped (1) by heating degree zone, and (2) by community type for the purpose of comparing differences in consumption within the groups.

The Sample

The first criterion for selecting a sample of school buildings to be a part of the study was that gas had to be used as the heating fuel. A second criterion was the length of vacation periods in February. A third selection factor was the age of the building. Further factors which entered into the selection of the sample buildings were: type of program, community type and location in a degree zone. A degree zone map of New York State is shown in Figure 1. A representation in each of the above categories was desired. The Division of School Facilities Planning provided a list of districts using gas as the heating fuel. Also provided by School Facilities Planning was information dealing with the age and type of program of the various buildings.

The sample of school buildings was at first restricted to those using gas for heating, due to the ease of measuring its consumption. Though oil is a popular heating fuel for schools, measurement of oil consumption poses several problems. Meters on oil lines are a rarity, forcing any measurement to be done with a dip stick, a highly in accurate method. Too, installation of the two meters per burner necessary to monitor oil use would have been a prohibitive expense. The same restrictions apply to measurement of oil use in the home. Tank gauges only measure in gross units making daily readings impossible. Thus, sample buildings and homes were chosen from those areas of the State in which gas was available. Though gas is not piped to all areas of the State, sample schools could be found in most of the degree day areas.

The sample was augmented by the addition of three New York City oil burning schools. New York City schools were added to give more depth to the metropolitan sample. The sample was further broadened by the addition of two all electric buildings in other districts.

Eight districts agreed to record fuel and electrical meter readings in a total of twenty buildings. One of these districts subsequently added data for an additional building. Each district agreed to encourage thirty students in each of their buildings to record the gas and electric meter readings of their homes. New York City was excluded from home meter readings due to the large number of apartment dwellings in

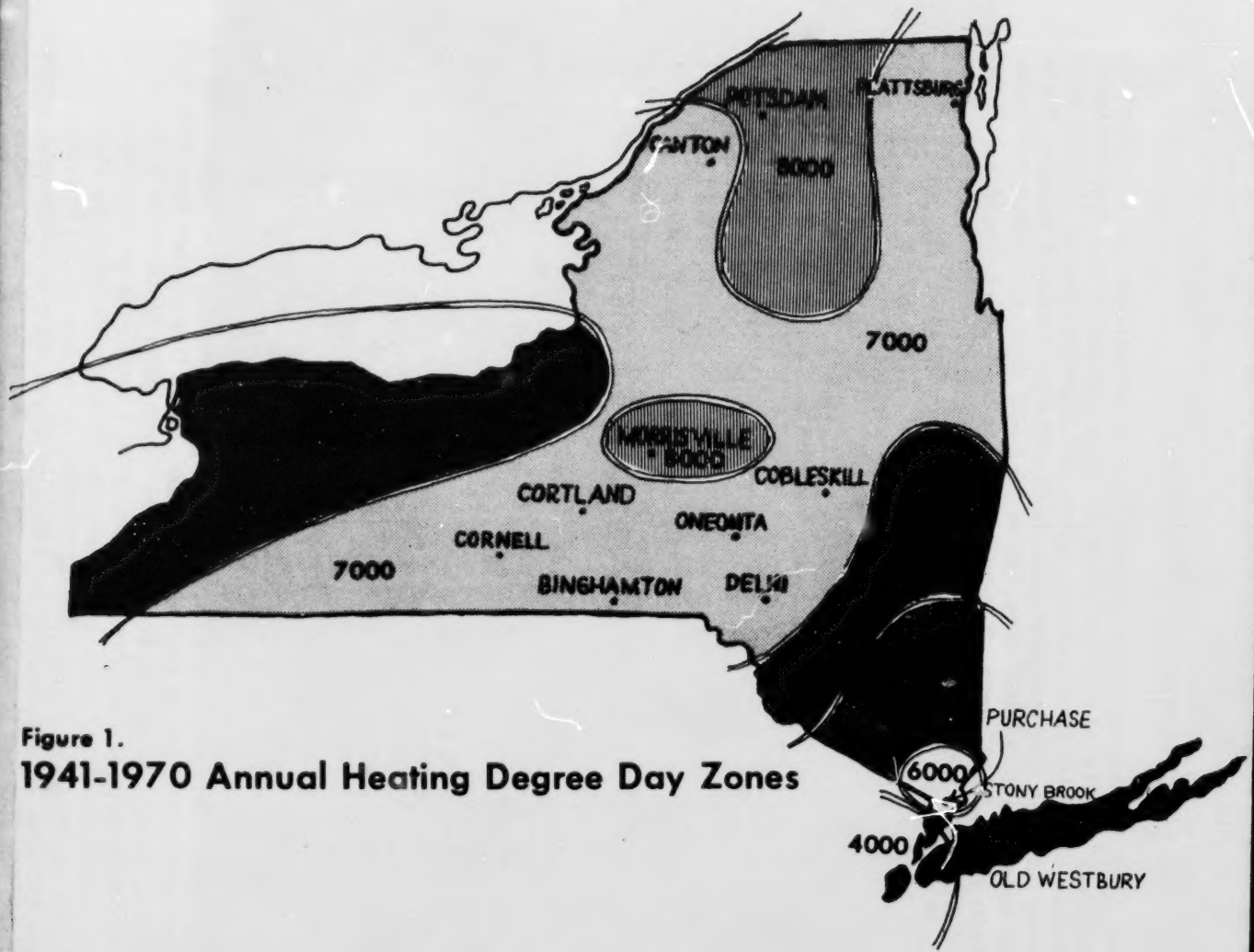


Figure 1.
1941-1970 Annual Heating Degree Day Zones

which pupils were unable to gain access to meters. A few days before February first, two districts, which were already recording school meter readings as a part of local conservation projects, offered to supply their data. One of the districts metered gas in one building, while the other metered oil in two buildings. It was by then too late to arrange for children to read the meters in the homes of these later two districts. The offer of school building data was none-the-less gratefully accepted. Time and lack of basic data upon which to select schools restricted the inclusion of more buildings. Thus, ten district supplied data about 24 buildings.

Seven districts agreed to gain cooperation of students and parents for collection of home energy use. The twenty-four school buildings included six buildings located in metropolitan areas, ten in middle-size cities, and eight in suburbs. Twelve were elementary buildings, four middle or junior high, and eight were high schools. Three buildings were located in 4,000° zone, four in the 5,000° zone, six in the 6,000° zone, and eleven in the 7,000° zone. Ten buildings were built before World War II and fourteen after World War II. The home sample is large enough to establish a statistical confidence level of 5%, but cannot be considered a random sample.

Table 1

Districts Supplying Energy-Use Data

District Name	Number of Buildings
Buffalo	3
Cohoes	3
Cortland	3
Elmira	1
Marlboro	1
New York City	3
Southampton	2
South Jefferson	4
Spackenkill	1
Watertown	3
Total 10	24

Excellent cooperation was shown by two State agencies. The Department of Environmental Conservation was helpful in supplying oil flow meters for a New York City school building while The Public Service Commission came twice to our aid in securing school building meter readings. One district was to change from gas to oil as traditionally done at the beginning of February. Special permission was obtained for the district to continue on gas. Finally, another district could not read its meters because the local energy supplier had long ago locked them in a cabinet. Special permission was obtained to have the meters made available for daily readings.

COLLECTION OF DATA

School Building Meters

Meter readings in the schools were to be taken by custodial staff at approximately the same time in the afternoon, preferably when the thermostats would normally be set back for the evening. In some districts school was closed on Friday night and reopened on Monday morning. Thus, it was necessary for the custodian to make special trips on Saturday and Sunday to read the various meters. Costs for overtime in such cases were charged to the project. Minimum/maximum thermometers were to be read at the same time as energy meters and reset for the next day. Costs of a thermometer for each school building was also borne by the project.

Minimum/maximum thermometers were necessary to obtain the degree day figures for each day during the month of February. Degree day figures were used to equalize the effect of variable temperatures in the different areas of the State in which the school buildings and homes were located and thus supplied the common base which allowed the consumption figure for any area to be compared or combined with those of other areas. The staff of the Division of School Facilities Planning, who had rough estimates of fuel needs of individual buildings were an invaluable resource in the estimation of the plausibility of the meter readings. Children were to read the gas and electricity meters when they arrived home from school on Friday, and on Sunday night, or the night before going back to school when there was a vacation or a snowday. Requiring meters to be read about twice each week reduced the burden upon the children. Daily recordings of home meters were not considered necessary since the final basis for comparison was to be an average of consumption by "in" or "out" periods. Custodians proved to be the better meter readers. High school students were neither as reliable nor as accurate as were elementary students. Four hundred fifteen usable home records were returned out of a hoped for seven hundred.

Data Forms

To assist custodians and students in recording their meter readings, and to standardize the method of reporting those figures, record sheets were prepared by Division of Research project staff. The recording sheets were then reproduced as necessary by each district.

Home record sheets contained representations of the dial faces of the gas and electric meters. Both gas and electric readings of home use required only that the pointers be drawn on the dial faces on the record sheets as they appeared on the meters.

RECORDED DATA

Data Consolidation, Transferral and Synthesis

Because of possible inaccuracies in the recorded home and school data, hand calculation of daily figures and daily averages assured careful quality control. The most difficult part of the analysis was preparation of basic data sheets. Once the readings were entered on preliminary worksheets from the home and school records, analysis proceeded swiftly.

The basic plan for examination and synthesis of the data was to adjust the fuel readings by the degree day, to convert energy use figures into BTU's, to separate readings into "in school" and "out of school" groups, to secure an average daily use figure for the two groups, and to determine if the consumption of the two groups was different. Worksheets were constructed on which meter readings from schools and homes could be transferred and on which results of calculations could be recorded in an orderly and sequential fashion.

Table 2

BTU CONVERSION CHART

Type of Fuel	BTU's Per Unit	
Natural Gas	1,031.00	per cubic foot
Oil (# 1-4)	138,690.48	per gallon
Oil (# 5&6)	149,690.48	per gallon
Electricity	3,412.19	per kilowatt-hour

Since one segment of the analysis called for the comparison of the amount of all energy used when school was "in session" with that used when school was "out of session", data for the "in" periods for each school building were combined with those for homes related to buildings or districts. The same was done for "out" periods. Daily use was the basic comparison figure for equalizing the number of days of the "in" and "out" groups. "In" and "out" school building energy use was also expanded to represent total district consumption. School energy consumption was expanded by increasing the elementary, junior high, and high school consumption averages by the ratio of the sample buildings to the total number of school buildings in the district. Home energy use figures were expanded by increasing the daily use figures for each district by the total number of homes which had school age children. It was felt that living patterns and energy use would remain the same for homes without children, no matter what the school situation, and thus did not need to be considered in this study.

RESULTS

Energy Use of Sample School Buildings

Is more energy used when schools are in session than when closed during cold, winter weather? If so, not only would fuels be conserved by closing schools, but the cost of operating the schools would be reduced. Based upon comparison of the average daily use of fuel for heating, and electricity for lighting and other operations, more energy was used in the sample school buildings when schools were in session than when not in session (Table 3). This is true even though some activities such as evening classes, sports programs, or maintenance work took place during measured periods when school was defined as being "out" or not in session.

Fuel savings were accomplished in each of the sample buildings, but not necessarily at statistically important levels. This becomes apparent when buildings were grouped into several classifications (Table 3). Buildings in the 4,000° —5,000° heating zone used significantly less energy when closed, while school buildings in the 6,000° and 7,000° zones did not use significantly less energy. Big cities (and to a lesser extent the suburbs) showed statistically significant savings in energy, while middle sized city schools did not. Elementary and high schools used statistically significantly less energy while the difference in energy use was not statistically significant for junior high schools. Buildings constructed before World War II showed no strong energy saving when closed, but buildings of post World War II construction showed statistically significant energy savings when schools were closed (Table 3). Because of the small building sample these samples cannot be generalized to the whole state.

Homes Energy Use in Sampled Homes

When children attend school, are there indications that less energy is used in the homes from which they come? Table 3 data suggest that thermostats might have been turned down, stereos and televisions used less, and doors opened less frequently when children were in school. Energy used in the sample homes in each district was less during "in session" periods as opposed to "out of session" periods. The difference was on the whole not statistically significant, however. Only sampled homes in the 7,000° zone showed a statistically significant increase in energy use when schools were closed.

Combined School and Home Energy Consumption

In order to determine whether energy is really conserved when schools are closed, it would be necessary to measure energy use in every school building and every home in the State. That is virtually impossible. Yet, energy use figures of the sample buildings and homes can be expanded to yield an estimate of total consumption. Though expanded school district figures always showed more energy was used when schools were in session, only the 4,000°—5,000° heating zone difference was statistically significant (Table 4).

Expanded home use always indicated more use of energy when children were home. However, the difference was never statistically significant.

Combined school district and home expanded figures revealed no statistically significant differences to have been found for total use or any classifications. Furthermore, the last column of Table 4 shows that though most classifications may have been estimated to have used more fuel when schools were not in session, in one classification the opposite was true.

Cooling Down of School Buildings

Thermostats of school buildings are generally turned down to 50°-55° in mid-afternoon depending upon evening use of the building. Temperatures below 50° are felt to be injurious to a building due to differences in both speed and amount of contraction and expansion of the various building materials, and the possibility of even lower temperatures in the poorly heated sections of the building. With the turning down of the thermostat, a building will cool, using no fuel, until the low thermostat

Table 3

Consumption of Energy Use of Sample
School Buildings and Homes

	Building Sample	Home Sample
Total Sample	More used when IN session	More used when OUT of session
Degree Zone:		
4/5,000°	Sig.* more used when IN session	More used when OUT of session
6,000°	More used when IN session	More used when OUT of session
7,000°	More used when IN session	Sig.+ more used when OUT of session
Community Type:		
Big City	Sig.* more used when IN session	More used when OUT of session
Mid City	More used when IN session	More used when OUT of session
Suburb	Sig.+ more used when IN session	More used when OUT of session
Age of Building:		
Pre W.W. II	More used when IN session	
Post W.W. II	Sig.* more used when IN session	
Program Type:		
Elementary	Sig.+ more used when IN session	
Junior High	More used when IN session	
Senior High	Sig.* more used when IN session	

+ .05 level of confidence
* .01 level of confidence

Table 4

Comparison of Estimated Energy Use of Expanded Sample
of School Districts and Homes

	School Districts	Homes in Districts	Homes Plus Districts
Total Sample	More used when IN session	More used when OUT of session	More used when OUT of session
Degree Zone:			
4/5,000°	Sig.+ more used when IN session	More used when OUT of session	More used when OUT of session
6,000°	More used when IN session	More used when OUT of session	More used when IN session
7,000°	More used when IN session	More used when OUT of session	More used when OUT of session
Community Type:			
Big City	—	—	—
Mid City	More used when IN session	More used when OUT of session	More used when OUT of session
Suburb	More used when IN session	More used when OUT of session	More used when OUT of session

— Sample too small
+ .01 level of confidence

setting is reached. If a building retains heat, one might reasonably expect very little fuel to be used on the day, or days, directly following the turndown of the thermostat. Certainly, if body heat of children and staff is an important heat-producing element, the use of fuel could be greater during non-school days, than when school is in session.

Daily average fuel consumption figures (Figure 2) suggest that fuel consumption decreases sharply on Saturday after the thermostats are turned down on Friday. School buildings tended to cool quickly as evidenced by the fairly stable use of energy for heating on Saturdays as compared to other non-school days. The fluctuations in fuel consumption during days when schools were closed could have been due to the effects of sun and wind, or varied use of the buildings for maintenance, repairs, evening classes, sports activities or drama presentations, which were not accounted for in the study.

SUMMARY AND CONCLUSIONS

Ten New York State school districts provided gas, oil, and/or electric meter readings of 24 school buildings during the month of February. Seven of these districts asked students to collect their home gas and electric meter readings. Energy use each day was adjusted by the average temperature of that day and converted to BTU's. Comparisons of energy use when children were "in" school and "out" of school were made for both school buildings and homes.

Building energy use in the sample school buildings was generally greater when children were in school than when schools were not in session. Use was not uniformally significantly greater across classifications of degree zones, community type, program type, or age of building. Thus, though on the whole energy was conserved by the sample schools by closing schools during the cold month of February, significant savings could not be assured from individual schools. This may have been due to extracurricular or plant maintenance activities which were conducted during closed periods.

More energy was used in the sample homes when schools were closed than was used when schools were open, but the difference was not statistically significant.

Home data for "in" school periods and for "out" of school periods was expanded to estimate the use of fuel for all homes in the community. School building data for "in session" and "out of session" periods were likewise expanded to approximate energy use in all the schools of each of the districts. Total home and school "in" session energy estimates were compared with total home and school "out" of session estimates. Though expanded data suggested slightly more energy would be used when schools were not in session, the differences were not statistically significant.

Though the sample upon which this study is based is small, according to the estimates based upon the sampled schools and homes, energy would not be saved by closing schools during the cold winter months. Instead more energy may be used due to increased home consumption, which may over-balance school energy savings.

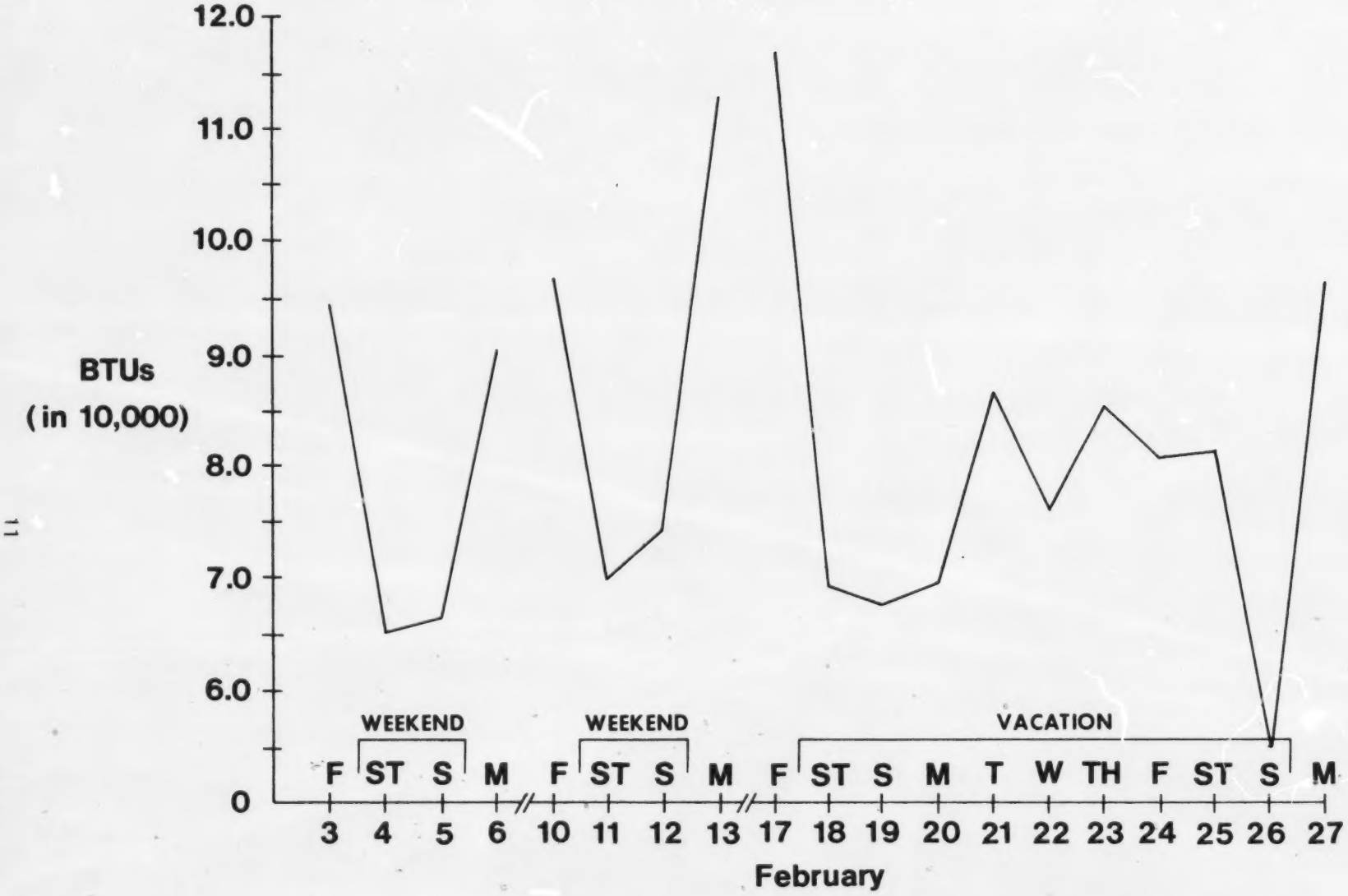


Figure 2. Average Daily BTU's Consumed By School Buildings

Appendix A

Energy Consumption Tables to Support Tables 3 and 4 in the Text

Table 1. Energy Consumption of Sample Schools

Category	Number			Total Daily BTU's			Level of Significance
	Districts	Buildings	Homes	IN Session	OUT of Session	Difference	
Total Sample	10	24	--	158,701,586	92,165,589	66,535,991	.4
4000/5000° Zone	4	7	--	46,867,346	21,369,994	25,497,352	.01
6000° Zone	2	6	--	44,982,066	23,073,481	21,908,585	.1
7000° Zone	4	11	--	66,852,168	47,722,114	19,130,054.	.1
Metropolitan	2	6	--	54,156,718	23,367,193	30,789,525	.01
Mid Size City	4	10	--	62,382,725	44,536,271	17,846,454	.1
Suburban	4	8	--	42,162,137	24,262,125	17,900,012	.05
Pre WWII Construction	6	10	--	44,626,629	23,959,866	20,666,763	.1
Post WWII Construction	10	14	--	114,074,951	68,205,723	45,869,228	.01
Elementary	6	12	--	29,384,257	15,452,588	13,931,669	.02
Junior High	3	4	--	18,073,571	6,306,480	11,767,091	.2
Senior High	8	8	--	111,243,752	70,406,521	40,837,231	.01

Table 2. Energy Consumption of Sample Homes

Category	Number			Total Daily BTU's			Level of Significance
	Districts	Buildings	Homes	IN Session	OUT of Session	Difference	
Total Sample	7	16	415	1,644,040	1,955,805	-311,765	.1
4000/5000° Zone	2	2	51	215,563	407,683	-192,120	.6
6000° Zone	2	4	66	383,375	390,501	-7,108	.6
7000° Zone	3	10	298	1,045,084	1,157,621	-112,537	.02
Metropolitan	1	3	55	198,907	304,471	-5,564	.8
Mid Size City	3	7	196	557,915	796,976	-74,078	.1
Suburban	3	6	165	622,235	854,358	-232,123	.4
Pre WWII Construction							
Post WWII Construction							
Elementary							
Junior High							
Senior High							

Table 3. Energy Consumption of Schools,
Expanded from Sample Schools to Entire District.

Category	Number			Total Daily BTU's			Level of Significance
	Districts	Buildings	Homes	IN Session	OUT of Session	Difference	
Total Sample	16	125	--	781,490,534	465,918,298	315,572,236	.4
4000/5000° Zone	2	10	--	41,124,890	22,704,824	18,420,066	.05
6000° Zone	2	93	--	628,665,876	360,041,838	268,624,038	.4
7000° Zone	3	22	--	111,699,768	83,171,636	28,528,132.	.6
Metropolitan	1	88	--	---	---	---	--
Mid Size City	3	23	--	114,197,400	81,580,803	32,616,597	.8
Suburban	3	14	--	56,283,504	34,098,035	22,185,469	.1
Pre WWII Construction							
Post WWII Construction							
Elementary							
Junior High							
Senior High							

Table 4. Energy Consumption of Homes,
Expanded from Sample Homes for Entire District.

Category	Number			Total Daily BTU's			Level * of Significance
	Districts	Buildings	Homes	IN Session	OUT of Session	Difference	
Total Sample	7	16	57681	5,798,832,019	6,285,532,919	-486,700,900	.2
4000/5000° Zone	2	2	3095	347,847,733	672,038,632	-324,190,899	.6
6000° Zone	2	4	47666	4,708,920,719	4,796,379,179	-87,458,460	.6
7000° Zone	3	10	6920	742,063,567	817,115,108	-75,051,541	.2
Metropolitan	-	--	---	-----	-----	-----	--
Mid Size City	3	7	8328	839,526,424	906,170,959	-66,644,535	.4
Suburban	3	6	4346	475,033,150	811,736,551	-336,703,401	.1
Pre WWII Construction							
Post WWII Construction							
Elementary							
Junior High							
Senior High							

* Data on number of homes taken from 1970 Census and corrected to 1977 available for district only. Thus, N used for determining level of significance is district figure.

Table 5. Energy Consumption of Schools Plus Homes, Expanded from Sample Schools and Homes to Entire District.

	Number			Total Daily BTU's			Level * of Significance
	Districts	Buildings	Homes	IN Session	OUT of Session	Difference	
Total Sample	7	125	57,681	6,580,322,553	6,751,451,217	-171,128,664	.8
4000/5000° Zone	2	10	3,095	388,972,623	694,743,456	-305,770,833	.6
6000° Zone	2	93	47,666	5,337,586,595	5,156,421,017	+181,165,578	.6
7000° Zone	3	22	6,920	853,763,335	900,286,744	- 46,523,407	.6
Metropolitan	1	88	45,007	---	---	---	--
Mid Size City	3	23	8,328	953,723,824	987,751,762	- 34,027,438	.4
Suburban	3	14	4,346	531,316,654	845,834,586	-314,517,932	.2
Pre WWII Construction							
Post WWII Construction							
Elementary							
Junior High							
Senior High							

*See footnote Table 4.

Appendix B

Home Meter Record Sheet

ENERGY CONSUMPTION STUDY

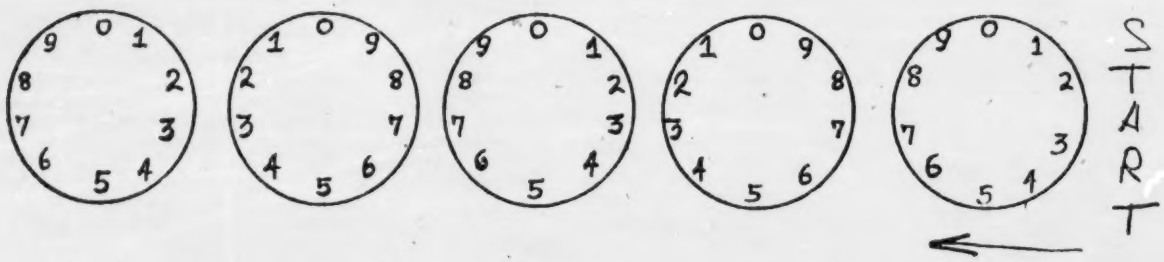
Home Form

School District _____ School You Attend _____

Date _____ School in session ___ Yes ___ No

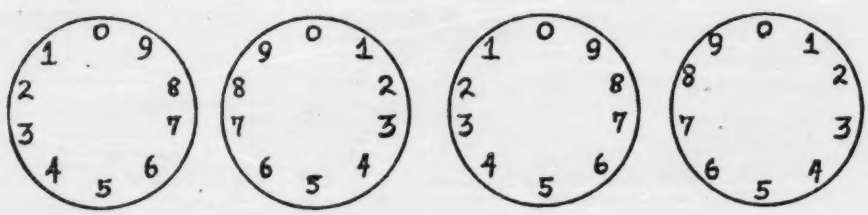
Time Meters Read _____

ELECTRIC METER: Mark on the dials below the exact position of the indicators as they appear on the dials of your meter. Read from right to left.



GAS METER: Choose proper meter type. Mark either the exact position of the indicators on the dials below or the numbers in the appropriate boxes as they appear on your meter.

Dial Type



or

Direct Number Type